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ABSTRACT

This manual presents an admissions scattergram as a tool to help school counselors who are working with high school students making college decisions. The approach described in the manual encourages student initiative in exploring, discovering, and deciding by following a rational process of understanding how to make an appropriate decision. An admissions scattergram is defined as the charted application history of students from a certain school to a certain college. Reasons why admissions scattergrams have not been used in the past are explored and suggestions are offered for collecting the data needed to create a scattergram. It is noted that the most comprehensive survey on selective admissions practice concluded that in most selective universities grades and test scores constituted about 75% of the rationale to admit or deny admission. The admissions scattergram is described as focusing on relating test scores and grades by assigning X, the horizontal range, to be the test index scale and Y, the vertical range, to be the grade point average scale. The scattergram format is presented and ways to use a scattergram in counseling college-bound students are discussed. (NB)

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HOW TO MAKE AND USE SCATTERGRAMS IN COLLEGE COUNSELING

A Manual for School Counselors

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The Armand Hammer United World College (a secondary school)

CG 020138

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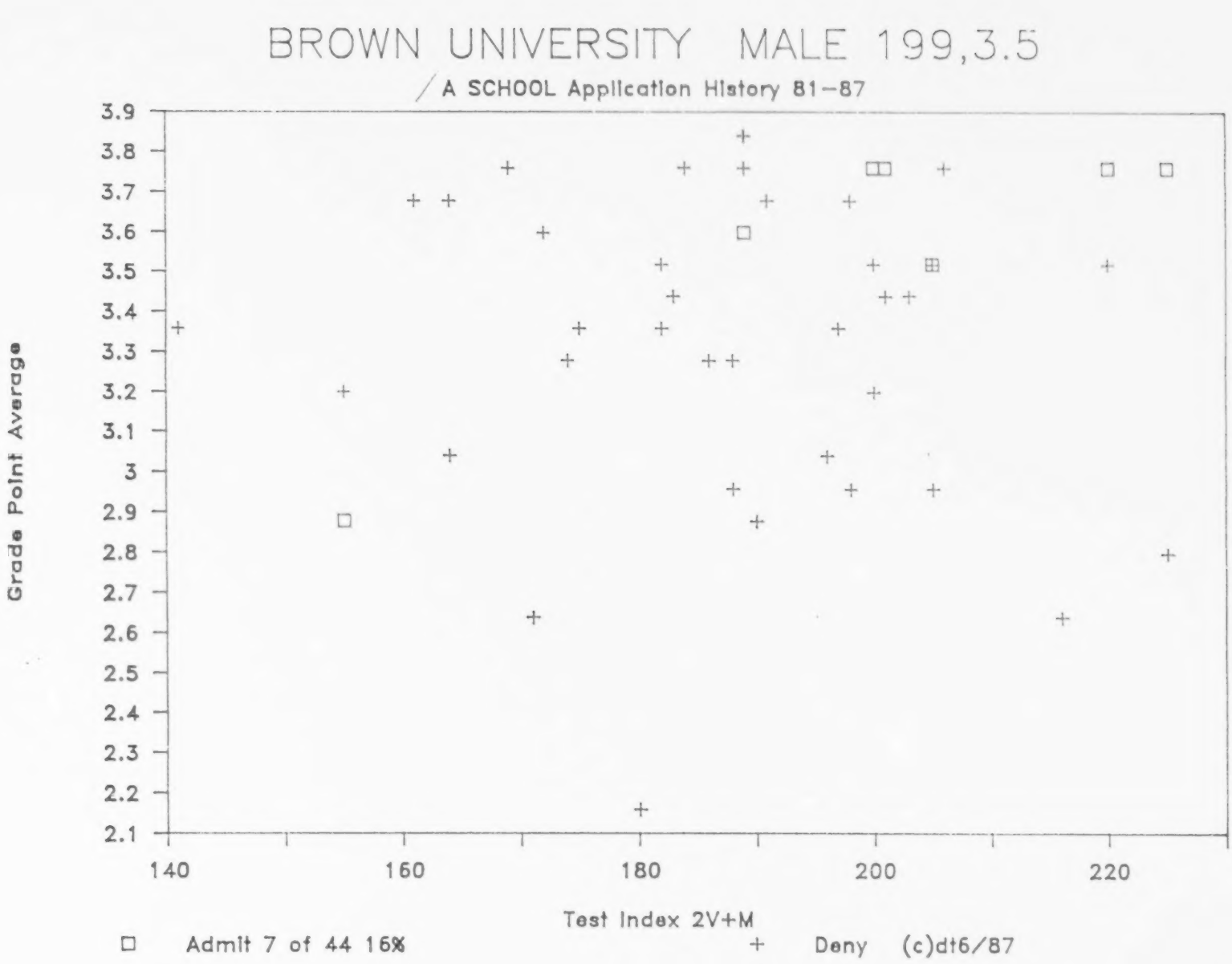
BROWN UNIVERSITY MALE 199,3.5
A SCHOOL Application History 81–87
Grade Point Average
3.9
3.8
3.7
3.6
3.5
3.4
3.3
3.2
3.1
3
2.9
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
140
160
180
200
220
Test Index 2V+M
Admit 7 of 44 16%
Deny
(c)dt6/87

3

FIGURE 1

4

I. Students Need Selectivity Information They Can Understand

Three questions tend to dominate students' consideration of college choice: "What college is 'right' for me?", "Can I afford it?" and, for those with high aspiration, "Will I be admitted?" For most students the answers to these questions are not easy. The counselor's mission is to help students sort through these complexities while using the problem of college choice as an opportunity to teach them decision-making skills applicable in selecting options at other significant junctures in their lives.

This manual focuses on the "Will I be admitted?" question, but approaches it from a counseling perspective which encourages student initiative in exploring, discovering and deciding following a rational process of understanding how to make an appropriate decision. Getting the facts on the comparative admissions selectivity of colleges is not as easy as it ought to be. Nor is getting students to understand and use appropriately the selectivity facts a simple matter.

Traditional sources of admissions selectivity are general compendia such as The College Board Handbook, Peterson's Guide, Barron's or more specifically, the university admissions offices' own annual profiles of the admitted classes. The latter are, of course, the most useful to the counselor, but usually these profiles are not routinely available to students. "Hard" selectivity information is normally couched in statistical means or ranges on scales of the SAT or ACT standardized tests and rank or grade point averages. The position of the extremely able student is well defined on these scales, but that rare student does not constitute a college counseling problem. The counselor is concerned with that segment of the college bound population which bulges out in the bell-shaped curve in a great cluster crowded into the region of the lower limit of acceptability. How does the counselor find the time to deal individually with the aspirations and the self-knowledge of each member of this cluster of potential candidates whose academic characteristics place them at the threshold of acceptability at a given college?

I have found admissions scattergrams to be the answer. [see Figure I] An admissions scattergram is simply the charted application history of students from a certain school to a certain college. Students understand them. Parents understand them. The whole task of developing a set of target colleges to apply to which represents an appropriate range of selectivity risk from "ambitious" to "safe" is made understandable and easy for the student through the use of scattergrams.

II. Why Haven't Admissions Scattergrams Been Used Before?

Novel professional practice invariably meets initial resistance. The story of admissions scattergrams in counseling practice is no exception. That history is interesting but it would diffuse the focus of this manual to tell it here. Any counselor intending to create an admissions selectivity information system to help his or her students plan better application strategies should think about how to answer those critics who insist that using admissions scattergrams fosters an unwonted emphasis on grades and test scores and contributes to an increase in what is already a high level of student anxiety about getting into college.

There are a number of reasons why scattergrams were not earlier incorporated into the modus operandi of school counselor practice. College counseling in schools is only now emerging from the domination of university admissions offices. School counselors have understandably practiced deference to those admissions officers who decide whose students will be admitted. It is the selective universities who have done the research, defined the issues, articulated the themes, interpreted the needs. It goes without saying that they have done so in terms of their peculiarly constricting function to the flow of students en route to their adult aspirations.

School counselors in a healthy show of maturity are now beginning to do their own research, ask questions, define issues from their perspective at a more fundamental level of the educational pyramid. We were educated as school counselors in university graduate schools of education by university professors. We learned specifically about admissions counseling from our professional admissions organizations, The College Board and NACAC, both of which had their origins as college rather than school affiliations. In both professional organizations the views and interests of the "higher" receivers of students have tended to prevail over the views and needs of the "lower" producers of students.

Plainly our higher educational admissions mentors did not want us to know too precisely the way in which they use tests and grades to make admissions discriminations. Hence they tended to sooth us with the nostrum that they look at the "whole student." They didn't teach us to make scattergrams because that wouldn't be looking at "the whole student". Meanwhile, as scattergrams plainly illustrate, the most selective universities were, indeed looking at the "whole student" once that whole student had been pre-screened by the grade and test score combinations.

Another reason scattergrams didn't emerge earlier in school counseling history is that they take some time and trouble to create. Counselors have too little time and too much trouble already without taking on the kind of tedium and trial that creating a scattergram information system involves. Fortunately computers make the data management task feasible. Those counselors who have developed their scattergram systems find that their usefulness fully justifies the time and trouble taken to create them. A mature scattergram information system made freely available for self-study by students in the guidance center is a great time-saver for the counselor because he or she can now work with informed, realistic students talking about more important questions than "how likely am I to be admitted." Scattergrams simply answer that question as definitively as could an experienced counselor. Even better as a guide to practical action the answer to the "how likely" question comes as the result of the student's own discovery of the facts rather than from the mouth of the counselor. Students tend to be exhilarated by the sense of power that comes from experiencing understanding and discovery about important but hitherto mysterious matters. On the other hand students tend to deny the validity of the counselor's judgement or even resent being told by a counselor that they have little chance of being accepted at Carleton -- unless they can see if for themselves.

Nor does the nature of the counseling environment conduce to innovation. The counselor's role requires that we respond to the immediate needs of the present class. Responding to the inexorableness of the annual application time-table, the daily schedule of appointments, the visits of the college representatives, etc. usurps the counselor's time and energy. Under such conditions it is not easy to find the time to plan the long-range approach, do the research for and win administrative support of a new program. Curiously scattergram development has proceeded initially and more often in independent schools where counselor--student ratios tend to be more favorable and where counselors are expected to spend more time with students and parents on college planning. I believe scattergram systems will have an even greater utility in large public high schools where higher student-counselor ratios make counseling efficiency a real priority.

III COLLECTING THE DATA

Admissions scattergrams are based on the assumptions that admissions officers take grades and test scores seriously as some sort of quantification of a candidate's academic promise. Mature scattergrams certainly support this conclusion. The most comprehensive survey on selective admissions practice concluded that in most selective universities these two factors constituted about 75% of the rationale to admit or deny. Obviously other

factors enter into the decision and admittedly just considering grades and test scores doesn't comprehend the whole student. But taking seriously the factors that account for %75 of the admissions decision is worth doing. This is not to concede that grades and test scores ought to have this weight. But in fact and in practice they do. Since that is the case, it behooves counselors to transcend their anguish about this reality and deal with it pragmatically. Making scattergrams out of applicants' grades and test scores is a useful way to respond. Here's how.

Be absolutely zealous in keeping the record of every application. At minimum the data on each candidate should include name (or number) sex, 7th semester GPA, best SATV and SATM, all colleges applied to and finally the outcome (admit or deny) of each application. It is interesting to code for other characteristics which are known sometimes to over-ride purely academic factors in admissions decisions. Such things as the lack of financial need, athletic prowess, dramatic, music or leadership talent, alumni or ethnic descent are examples of characteristics that could conceivably be exploited by colleges. These factors about candidates can be charted for the record. Data about students in the admissions process, however, can multiply exponentially. Parsimony in data collection is recommended for several reasons. First, it is difficult enough to record, collect, verify, organize, and manipulate just the amount of data that building a simple scattergram set requires. Adding additional categories increases the complexity and lessens the chances of the counselor being able to follow all the factors through to a useful analysis. The second reason for keeping it simple is that the graphic depiction of the data, which is the ultimate goal of the data management process, rapidly becomes blurred when more than a few critical characteristics are displayed. The goal is comprehensibility not comprehensiveness. It is nice to know that the lowest data point on the scattergram for Brown happens to have once been the biggest and best fullback in your school's history. But it is not necessary for students using the scattergram to know that so long as they recognize that those "out of the ball park" acceptances show conclusively that admissions offices really do pay individual attention to students presenting especially interesting characteristics. That phenomenon should prompt them to ask the question: "What's special about me that might tempt Brown to bend its normal academic admissions threshold in my behalf?"

The resolve to record data for the current year's class is easily made. Some persistence, of course, in follow-through is necessary. Not every college routinely reports its admissions decision to the school. Students themselves are understandably reluctant to be forthcoming about the denials they've received. But the counselor must persist in recording the outcome of every application. Negative outcomes are just as instructive as positive outcomes in providing the meaning to scattergrams.

Without them it would be impossible to display the likelihood of success.

The counselor will need to assess the possibility of using data of previous years. If the complete data exists the attempt should be made. Just having data on where previous students attend or even where they were admitted is not sufficient. Unless there is a record of the outcomes of all the applications made for past years, forget about the history and concentrate on setting up a consistent data recording routine that will serve you for the future. It was the existence of a complete five-year application history record organized by colleges at Northfield Mount Hermon School that enabled me to develop the first scattergram set in 1980. The data inspired the question. "How could this be organized and made available in a comprehensible form to help students understand their own chances of acceptance without breaching the requirements of confidentiality of records?" The scattergram was the answer.

Counselors tend to be person-oriented rather than having a natural affinity for the clerical task of gathering data. You are encouraged to instruct an assistant who is good at detail to do the data collection. Just be very specific about what records you want and very insistent on getting all of them recorded accurately and in a usable format.

Notwithstanding those courses in statistics and tests and measurements we mastered in graduate school, it is my impression that many in our field don't really feel comfortable when the statistical discourse goes beyond averages and percentiles. We can, perhaps, deal with concepts like standard deviation, and maybe coefficient of correlation, but regression lines, error of measurement, and more arcane jargon is just gobbledegook. Graphs too, are a little too reminiscent of 10th grade geometry to elicit cheers. Perhaps its more useful to invoke something that was fun in our childhood like playing checkers, a crossword puzzle, or "Battleship" which involved ordering things in rank and file and then designating each square by calling out two values referring to the vertical and horizontal array.

That is essentially what a scattergram is -- an arrangement of the locations of two different characteristics that are related to the same individual. You can deal with the separate facts that Sally Jones has a GPA of 3.9 an SATV of 690 and an SATM of 720. All you need to do to assign Sally Jones a unique position on a scattergram is to adopt a scheme for combining Sally's verbal and math scores into one value. When you do this you are left with two values that partially describe Sally's academic promise. One represents her Grade Point Average and the other her Test Index. Bracket them together separated by a comma and you have an ordered pair of numbers that represents Sally. (TI,GPA) or (213,3.9). If you are with me you will wonder how I

got Sally's test scores from a 690 verbal and a 720 math into a 213 test index. Well you might ask. There are three obvious ways to combine separate verbal and math scores into one index number. A commonly used one is a simple sum. 1200 on the Boards is parlance used by students themselves to express a desirable minimum achievement. Another way is to average the two figures. Another way is to weight the scores differently in terms of some value judgement about the relative importance of the two scores for purposes of assessing the capacity of the student to do college work in certain programs. The selection score reported for the PSAT is 2V+M for both boys and girls. That treatment is more useful for the general discrimination of college promise which the NMSQT is attempting than would be a simple sum of the verbal and math scores.

A more sophisticated way to combine verbal and math scores meaningfully is to take into consideration the general finding of sex specific differences in the verbal and math results of males and females. One can only suppose this difference is a product of culture and hence susceptible to change. The problem is that we can't achieve consensus on whether the girls or the boys own the preferable pattern. Research tends to show that weighting math for females more heavily than verbal produces slightly higher correlations with college grade achievement. In my earlier writing, I used to stress the importance of a different sex-specific weighting formulae. For purposes of making a useful scattergram set, I now tend to believe it probably doesn't make all that difference. Any consistent formulation that arranges students in a normal distribution around a mean will work. Doubling the factor which tends to show the least variance for the respective populations - verbal for boys, math for girls- will tend to spread the resultant distributions a little more and hence permit slightly more refined discriminations.

The questions that I ponder regarding this is whether sex-specific formulae in scattergrams helps or hinders the campaign to eliminate gender bias in admissions. I do very strongly advocate charting the admissions experience of males and females separately whether or not you use different weighting formulae. There is no better way to expose the ugly fact of continuing gender discrimination disadvantageous to women in selective admissions than to see it displayed on your locally-produced scattergrams. If enough of us did this the cumulative weight of our evidence would be so overwhelming that the selective universities would be forced to change.

IV MAKING THE SCATTERGRAMS

Once you have the application data, making the scattergram is simply a matter of locating each data point on the chart and entering the symbol for admit or deny. It's really like playing

battleship. I made my first two sets of scattergrams at Northfield Mount Hermon School manually on graph paper. Early in this process, I began to become very conscious of the appearance of the scattergram. I tried to perfect my uneven lettering because I sensed that students might not believe that a scattergram could transmit truth if the hand seemed shaky. I was making these scattergrams to test a concept and I took considerable pains to assure that the response of students was not disturbed by an untidy or unclear format.

Even though making scattergrams by hand does take a lot of time, I recommend the process as a way to acquire a tactile feeling for what is going on in the admissions experience of your students. When you are charting each admissions event which your students have experienced over the past few years you tend vicariously to share their experiences of success and defeat and you are moved to ask yourself some disturbing questions. "Must they really apply to this many colleges?" "Isn't there some more efficient arrangement our profession could devise to make this process less frustrating to students?"

Salutary though the manual production of scattergrams is, I was delighted when the parent of one of my students saw a presentation I made at a general college planning orientation meeting for parents. After the session, Brad Canterbury, of Sturbridge, MA asked if I'd be interested in getting my scattergram information on computer. This had been an ultimate goal all along and we worked out an arrangement for him to take over the subsequent production and annual revision of the Northfield Mount Hermon scattergram set. Incidentally, Mr. Canterbury developed a little cottage industry, "College Counseling Computer Service" and produces scattergrams on contract for a few other schools besides Northfield. I mention this because contracting with such a service is an excellent way to relieve yourself of the production details and assure that you have timely, comprehensive,tidy admissions scattergram set and supporting records. All you need to do is ship off your data to Mr. Canterbury and in a matter of weeks he will ship back your scattergrams.

There are two more ways to produce your scattergrams other than manually or by outside contractor. Have your own in-house computer center produce them, or best of all, bring the computer production right into your own office if you have the resources and the determination to see this course through to a successful product. I know it can be done. Without any previous experience with computers and without any special courses or training in programming, by using off-the-shelf Lotus software in an IBM compatible Compaq Deskpro PC, I do my own scattergram production. I know that Apple software will create XY graphs and that is essentially what a scattergram is.

V CONSIDERATIONS ABOUT X&Y

Scattergrams work because they concentrate on relating the two academic characteristics, test scores and grades, weighted most heavily by colleges in their admissions decisions. Let's now take a look at these quantifications of test scores and grades to see how they can be displayed most effectively. In software graphics parlance a scattergram is an XY graph. To avoid confusion let us always assign X, the horizontal range, to be the test index scale and Y, the vertical range, to be the grade point average scale. I have a mnemonic device that helps me in this distinction. Y has a vertical stem so Y (GPA) is the vertical scale.

Lets look at X. The test index. Earlier we have mentioned the various options for combining verbal and math. If all of your students take ACT there is no reason why you could not use the composite score for X. The primary rule for defining X is that it must be a term the student knows about himself or herself. The title for X on the scattergram must clearly indicate what it is. The goal for scattergram design is to make it so clear, so simple and so self-explanatory that a curious student need no oral instruction about its use.

The reason I prefer to make X the formula 2V+M (dropping the final cipher) is because that is exactly what the selection score of the PSAT is. It is useful for students to look at scattergrams as early as possible so that they come into early and realistic understanding of the importance of aiming for high grades and test scores if their goal is Cal Tech. Most college-bound juniors and increasingly eager sophomores know their PSAT scores and they can use them to get an early sense of their positioning in the college sweepstakes on the scattergram. Alternatively, students who have more modest goals and are unsure of their acceptability even at a less selective college can gain reassurance about the likelihood of admissions.

There is the temptation to limit your scattergram set to the most selective colleges in order to keep the magnitude of the data tracking and scattergram production from becoming too much of a burden. I view this to be a serious mistake. Students viewing scattergram sets need to see plenty of opportunity. When they look only at the scattergrams of highly selective universities they might conclude they were entirely out of the running. The fact is that a lot of well-known colleges with excellent programs and good status accept some students with academic characteristics that are quite ordinary. Students need to see this and so do some of those pompous college representatives who would have you believe they are doing you a special favor even to consider the application of someone in the 4th decile. Meanwhile you, of course, are doing them the favor of giving them the time of day.

Y, the vertical scale, is the grade point average. Here, again the idea is to have a value which the students know about themselves. Report this in exactly the manner it is reported on the student's report.

The most useful grade point averages are those which are weighted to account for accomplishment in honors or advanced placement courses. Admissions offices, of course, always carefully assess the curricular choices students have made and adjust their weighting of the grade point averages accordingly. Your students who might have chosen the lightest possible "college prep" curriculum could be seriously misled by a scattergram system in which their averages appeared to be equivalent to students making similar marks in much more demanding courses. The ideal, of course, is to have a weighting system which tends to discriminate among a group of students in the same way a selective college admissions officer would. The further your grade point average weighting scheme is from that model, the less useful will be your scattergram set.

VI A CLEAR AND SIMPLE FORMAT

Often in making scattergrams, I have thought, "Gee, wouldn't it be great to show this or that special characteristic - to add this legend or explanation? Maybe I could use some more symbols and rig my plotter to do some symbols in color." I've even carried out some of these impulses and have always been disappointed in the result. There may be a time in the future when all of us are so graphically oriented that graphic complexity will not daunt us as it now tends to do. But for now, we are, perhaps in the model T Ford stage.

My sense is that power of scattergrams to inform depends upon a clear, clean, stark, black and white picture of a given admissions pattern. I used to think it important to provide a special symbol for those students who were given wait-list status. Now I take the starker position that any student not yet admitted is denied. This makes a clearer pattern and produces a sharper image. The same could be said for schemes of coding for special characteristics such as ethnicity, talent, ability to pay. Such information is useful for research purposes and is well worth keeping on the roster of data which is the source document from which the scattergrams are built. I do not recommend attempting to show these characteristics on the scattergram itself.

The titles and legends should also be clear, simple yet provide enough explanation so a curious person could - perhaps with the aid of an explanatory poster in the guidance resource center - figure out the meaning of a scattergram as an aid to college

planning. I'm satisfied with this general format. [see Figure I] It names the college, the school, the years covered by the data, explains the test index formulae, labels the X and Y ranges and defines the meaning of the symbols. One only has to explain the system to a few curious students and they'll pass on the word to their peers.

VII USING SCATTERGRAMS

When I made by hand the first set of scattergrams at Northfield Mount Hermon in 1980, I though this was such a useful counseling tool that this idea would spread like wildfire. Now 7 years later and some 5 published articles mentioning scattergram techniques there are, perhaps, a dozen schools using them. Why? I think it is because counselors have some deep-seated inhibitions about resorting to what might be called "the technical fix." By nature we are clinicians, humanists more in tune with feelings, the personal, the subjective, community. Scattergrams are technical, analytical, objective, reductive, unfeeling, insensitive. Instinctively we resist the mechanical. It just doesn't seem right to reduce students to a point on a chart.

Added to this feeling is the whole issue of confidentiality surrounding the use of grades and test scores. Is it right to use confidential information in a non-confidential chart even though there is not a direct way to link a particular student to a particular data point. Obviously the charting of certain notorious admissions events would in some cases permit this confidential information to become public knowledge. Are there legal implications?

There is the question of college reaction to scattergrams. Some colleges attempt to maintain an image of higher selectivity than objective records from schools might find justified. Would such colleges be threatened, become defensive and retaliate by rejecting our school's candidates? Actually I discovered that despite my fears, college admissions officers responded with poise. As a matter of courtesy I asked permission of one college admissions director if she would mind of I used the scattergram depicting her college's application history to illustrate and article that I was publishing. She wrote back indicating that she would mind very much. In respect for her feelings, I substituted another scattergram. On the other hand other directors of admission, when asked, have said, "Sure, go ahead."

Thoughtful university admissions officials would much rather have well-prepared, academically qualified candidates in their applicant pool. They recognize that scattergrams can help a counselor produce those kinds of candidates.

The reserve I felt from my counseling colleagues about scattergram use is instructive. They, too, seemed somewhat threatened by this tool, tended to keep it in the bottom drawer explaining that it was "interesting", but didn't really add anything to their own gut feeling for the level of selectivity being practiced by the various colleges. That is probably true. A good scattergram set isn't any better than an experienced counselor in predicting admissions success.

If your counseling style involves a heavy investment in being the guru, scattergrams are not for you, because an aggressive use of scattergrams in college planning inevitably lessens students' dependence upon your hunches about their acceptability at specific colleges. Personally, I'm more comfortable with that, experiencing as I have on countless occasions that my hunch was wrong. I recognize however, that some college counselors encourage dependence and take satisfaction in demonstrating their own mastery of the selective college scene.

For me, scattergrams are simply a resource to be put at the disposal of students who are learning how to make important decisions. The more quickly the scattergrams are out of the counselor's desk drawers and into a central position in the library and the guidance resource center where students can refer to them unattended and unassisted, the better. Of course, in group sessions you do some orientation and training of students so they know about scattergrams - what they are - what they mean- and how to use them to develop a realistic application strategy. Then by all means just let them do it. You'll be pleasantly surprised about how effectively they will proceed.

The real clincher for the doubting counselor, however, comes when he or she is dealing with the difficult parent who has rigid and unrealistic college application plans for his or her child. Just pull out the Harvard scattergram, locate the child's characteristics on the chart and have the parent draw the conclusion about the meaning of the distance. Its dynamite. The parents next question will be -- "Could you show me some charts of other colleges where it seems more likely that Suzy could be accepted?" Of course you can and you do and the parent that came in like a tiger departs like a grateful puppy thinking - "Gee, that is one smart counselor."

I suspect that if scattergrams could be bought off the shelf like Peterson's Guides or The College Board Handbook, no school would be without them. They can't, however, and this is why so few schools are using them. There is a sort of chicken and egg conundrum about whether or not to develop a scattergram information system for your students. You'll never know how useful scattergrams are until you've tried them. You can't try them until you've developed your system. If you've got the data you

can get started within the year. Otherwise it may take several years of data collection before you have enough to be useful.

Thank you for your interest. You've already made an initial investment toward creating your scattergram system. I hope you'll follow through and I hope you'll feel free to call on me for whatever help I can give you on your project.

DCT Montezuma, New Mexico July 20, 1987